

**UNITED STATES DISTRICT COURT
DISTRICT OF MAINE**

ED FRIEDMAN,

Plaintiff,

v.

CENTRAL MAINE POWER COMPANY,

Defendant

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2:20-cv-00237-JDL

**DEFENDANT’S MOTION TO EXCLUDE THE
OPINION TESTIMONY OF DR. DAVID CARPENTER**

The Defendant Central Maine Power Company (“CMP”) moves to exclude the opinion testimony of Plaintiff’s proffered expert, David Carpenter, M.D. Dr. Carpenter is not qualified to offer the medical opinions he puts forward regarding Plaintiff’s individual medical risks; he lacks the foundation necessary to offer an informed and scientifically reliable opinion; and the evidence he relies upon to support his opinions is not relevant to Plaintiff’s particular case. Under Federal Rule of Evidence 702 and *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993), the Court must act as a gatekeeper to ensure that an expert’s scientific evidence is reliable and relevant, and that “junk science” is not admitted into evidence. For the reasons discussed below Dr. Carpenter’s opinions should be excluded.

MEMORANDUM OF LAW

A. The Daubert Standard

In applying *Daubert*, federal trial judges called upon to apply Rule 702 are “require[d] . . . to evaluate an expert's proposed testimony for both reliability and relevance prior to admitting it.” *Ruiz-Troche v. Pepsi Cola of Puerto Rico Bottling Co.*, 161 F.3d 77, 80 (1st Cir. 1998) (citing *Daubert*, 509 U.S. at 589-95). In assessing reliability, a court may consider “the verifiability of

the expert's theory . . . , whether the theory . . . has been published and/or subjected to peer review, and its level of acceptance within the scientific community.” *Id.* at 80-81 (citing *Daubert*, 509 U.S. at 593-95).

“Along with the reliability requirement, the *Daubert* Court imposed a special relevancy requirement.” *Ruiz-Troche v. Pepsi Cola of Puerto Rico Bottling Co.*, 161 F.3d at 81.

To be admissible, expert testimony must be relevant not only in the sense that all evidence must be relevant, *see* Fed.R.Evid. 402, but also in the incremental sense that the expert's proposed opinion, if admitted, likely would assist the trier of fact to understand or determine a fact in issue. In other words, Rule 702, as visualized through the *Daubert* prism, “requires a valid scientific connection to the pertinent inquiry as a precondition to admissibility.”

Id. This has come to be described as a “fit” requirement. *Id.*

B. The Medical Proposition the Plaintiff Must Prove

The Maine Public Utilities Commission has determined that for the public at large, “the use of smart meters¹, as implemented and operated by CMP, does not present a credible threat of harm to the health and safety of CMP's customers and . . . is, therefore, safe.” *Dec. 19, 2014 Order at 23*. That baseline factual proposition is not in dispute. Instead, the medical question Dr. Carpenter has been designated to address is whether this Plaintiff's rare blood cancer makes him “uniquely” vulnerable to adverse health effects from radiofrequency (RF) fields, such that CMP's installation of a smart meter on his property would create a “risk to his health” that is both specific to his disease and “significant enough to deprive him of ‘full and equal access’ to CMP's services.” ECF 26 at 7-8.

¹ A “smart meter” is a utility meter that allows “CMP to conduct automated and remote meter readings” and to communicate with meters located at a customer's premises. *Friedman v. Public Utilities Comm'n*, 2016 ME 19 (“Friedman II”), ¶ 2. The MPUC authorized CMP to use smart meters to measure the amount of electricity used by its customers. *Friedman v. Public Utilities Com'n*, 2012 ME 90 (“Friedman I”), ¶ 2.

C. Dr. Carpenter's Qualifications

David Carpenter is a medical school graduate whose professed specialty is “public health.” Carpenter Report² at 1. Crucially, though, he has never practiced clinical medicine – that is, direct care of patients – and he is not licensed to practice medicine in any jurisdiction. Carpenter Depo. at 12:22-13:2 & 13:3-5.

Dr. Carpenter is a Co-Editor and Contributing Author of the *BioInitiative Report: A Rationale for a Biologically-based Public Exposure Standards for Electromagnetic Fields (ELF and RF)* (www.bioinitiative.org) (hereinafter “BioInitiative Report”). In the Expert Report he has authored for this case, Dr. Carpenter says “[t]he BioInitiative Report documents effects on cellular and animals model systems, adverse human health effects and public health conclusions about impacts of electromagnetic radiation [electromagnetic fields including extremely-low frequency (ELF-EMF) and radiofrequency/microwave (RF/MW-EMF) fields],” and he characterizes it as a “comprehensive and up-to-date review of the scientific information on this subject.” Carpenter Report at 1. In his deposition, however, Dr. Carpenter acknowledged that (1) “the BioInitiative Report was an advocacy report,” Carpenter Depo. at 72:10-12; (2) it is not peer-reviewed, Carpenter Depo. at 73:1-5; (3) it has been criticized by the governments of the Netherlands, Denmark, Australia, and several other countries as being unbalanced and unreliable, Carpenter Depo. at 73:9-17; and (4) the findings reflected in it have been rejected by the World Health Organization. Carpenter Depo. at 74:1-24.

² Dr. Carpenter's Expert Report (hereinafter “Carpenter Report”) is Carpenter Deposition Exhibit 7. The deposition transcript, with exhibits 1-16, is appended to this motion as Exhibit B. We have not included Carpenter Deposition Exhibits 17-22, which consist primarily of former testimony that is not directly relevant to this motion. Additionally, because the transcript with Exhibits 1-16 is voluminous, we have separately attached the Report (which bears the date October 28, 2012, presumably in error) as Exhibit A, in order to make it more easily accessible to the Court.

Dr. Carpenter has testified in cases around North America about the effects of RF, including smart meters. In *none* of the cases where he has testified has *any* agency *ever* agreed with his opinion that smart meters pose a risk to human health.

- Dr. Carpenter testified before the Michigan Public Service Commission in opposition to the implementation of an Advanced Metering Infrastructure (AMI), arguing that smart meters would be dangerous to the public. The Commission approved the implementation of AMI notwithstanding his testimony. Carpenter Depo. at 29:2-11 & 48:13-20.
- He testified in a case in British Columbia in opposition to smart meters, but the side for which he testified did not prevail. Carpenter Depo. at 48:21-49:5.
- In a case in Quebec, he was disqualified from testifying, although he professes to not know why that occurred. Smart meters were approved in that case too. Carpenter Depo. at 49:14-50:3.
- He testified in a Pennsylvania case in opposition to smart meters, but the side for which he testified did not prevail. Carpenter Depo. at 51:9-15.

Dr. Carpenter is aware of no jurisdiction that has ever barred the implementation of AMI on the ground that it poses an undue risk to public health. Carpenter Depo. at 52:2-10.

D. Dr. Carpenter's Opinions and the Bases for Them

In Dr. Carpenter's Expert Report, he advances two core opinions. First, Dr. Carpenter says the Plaintiff is "justified in his concern that having a smart meter installed at his home actually risks worsening his lymphoma's progression or symptoms." Carpenter Report at 5. Second, he says: "[I]f a smart meter were placed on Mr. Friedman's house, the elevated exposure coming from

it would increase the risk his cancer could worsen which in turn logically may exacerbate his symptoms affecting his quality of life and likely shortening it.” Carpenter Report at 5.

Dr. Carpenter acknowledges that there are *no* “specific studies connecting smart meters directly to cancer.” Carpenter Report at 3. More to the point, for purposes of our case, he says that “[t]here is not strong evidence that Walderstrom [sic] macroglobulinemia is caused by exposure to RF-EMFs, but neither is there any evidence that it is not associated with these exposures, since it has not been studied.” Carpenter Report at 4.³ Despite this acknowledged evidentiary void, Dr. Carpenter proposes to testify that exposure to the RF produced by a smart meter *would* significantly increase the risk that Mr. Friedman’s prognosis, or the symptoms of his disease, will get worse.

Dr. Carpenter reaches this conclusion by stringing together the following propositions:

1. “[T]here have long been studies showing DNA damage from exposure to RF including at 2450MHz (Lai and Singh 1995), the same frequency used by CMP smart meters,” and “DNA damage is often a precursor to cancers whether through oxidative stress (Yakemenko, et al., 2015) or other mechanisms.” Carpenter Report at 3.
2. Smart meters “transmit signals to the utility for relatively short periods of time but generate radiofrequency pulses at frequent intervals all day and night,” thereby creating significant “cumulative, aggregate RF exposure.” Carpenter Report at 3.

³ Although his report seems to suggest that Dr. Carpenter thinks Waldenstrom’s Macroglobulinemia could be “caused by exposure to RF-EMFs,” he acknowledged in his deposition that he has no information about when or how the Plaintiff acquired his disease. Carpenter Depo. at 39:18-20. A defense expert, Dr. Robert Gale (who, unlike Dr. Carpenter, is an oncologist and a specialist in the study and treatment of blood cancers), will testify that the disease was genetically transmitted.

3. “The waveform used by smart meters consists of very high intensity but very brief burst of pulses,” and “[t]here is building evidence that the rapid rise and fall of these RF peaks is particularly provocative to humans.” Carpenter Report at 3.
4. “Besides airborne transmission emissions to the utility there is some evidence these RF emissions as well as lower frequency emissions affecting power quality, may be transmitted throughout structures as conducted and radiating emissions on building wiring, acting as an antenna (Isotrope, 2013).” Carpenter Report at 3.
5. There are published reports that posit the existence of a phenomenon known as “electro-hypersensitivity” (EHS) – a syndrome “found in some individuals who in the presence of elevated RF-EMFs develop symptoms of fatigue, headache, brain fog, tinnitus and other symptoms that in some people can be very disabling” – and “EHS symptoms like these and others share much in common with many cancer symptoms and cancer treatment side-effect symptoms.” Carpenter Report at 3.
6. There have been published studies of individuals and groups of people who self-identify as having EHS, and who claim either (1) that their health has declined after smart meters were installed in their homes, or (2) that they can identify, by reference to transient symptoms, when electromagnetic fields (EMFs) are present in proximity to them. Carpenter Report at 3.
7. The International Agency for Research on Cancer (IARC), which is an agency of the World Health Organization, has designated exposure to radiofrequency electromagnetic fields as a “possible human carcinogen,” “based primarily on studies of development of brain cancer among individuals who used mobile phones frequently for 10 years or more.” Carpenter Report at 2 & 4.

8. More recently, “the US National Toxicology Program (Wyde et al., 2018) and a study from the Ramazzini Institute in Italy (Falcioni et al., 2018) have found that RF-EMFs at intensities modeled to reflect whole body exposure from cell phones . . . and cell towers, respectively, cause malignant brain and cardiac Schwannoma cancers in rodents, and also caused DNA damage to neurons,” and “[t]here is a large body of evidence showing that excessive exposure to EMF of various frequencies increases risk of cancer.” Carpenter Report at 4.

As explained below, some of these propositions are scientifically dubious. Others, which are either true or half-true, are immaterial to this case. Whether they are judged separately or collectively, they do not come close to supporting the theory Dr. Carpenter espouses. All we are left with is the undisputed fact that there are no “studies connecting smart meters directly to cancer,” Carpenter Report at 3, or linking RF exposure at *any* level to Mr. Friedman’s particular disease.

E. Argument

Dr. Carpenter’s testimony is inadmissible for several reasons.

First, Dr. Carpenter, who has never treated *any* patient, let alone a patient with the specific type of cancer that afflicts the Plaintiff, is not qualified to offer medical opinions concerning individualized medical causation or risk. *See infra* pages 10-11.

Second, Dr. Carpenter has no information about the dose of radiofrequency (“RF”) energy to which the Plaintiff would be exposed if a CMP smart meter were installed at his home. Therefore, he lacks the foundational data necessary to support an informed, scientifically-reliable opinion that the RF emitted by a CMP smart meters would be harmful to anyone, including the Plaintiff. *See infra* pages 11-12.

Third, because Dr. Carpenter has not reviewed any of the Plaintiff's medical records, and knows virtually nothing about the Plaintiff's condition, he lacks the foundational data necessary to support an informed, scientifically-reliable opinion concerning the Plaintiff's individualized, disease-specific susceptibility to adverse effects from exposure to RF. *See infra* pages 12-13.

Fourth, the evidence Dr. Carpenter has cobbled together – consisting largely of studies of persons who claim to be electrically hypersensitive, self-reports from individuals who believe their symptoms are associated with RF, and studies purporting to demonstrate that high-intensity exposure to RF from devices other than smart meters can cause cancers which are different from the cancer that afflicts the Plaintiff – do not support his conclusion that exposure to RF from a smart meter would adversely affect this particular Plaintiff, with his particular disease. *See infra* pages 14-25.

1. The Facts and Data Dr. Carpenter Has Considered

a. Exposure Data

Dr. Carpenter knows nothing about the Plaintiff's exposure to RF – either his exposure today, based on his lifestyle, or the incremental exposure he would have if a smart meter were installed at his home. Importantly, moreover, he has completely ignored the data available to estimate those exposures.

Duty Cycle Data

First, Dr. Carpenter has no information about the duty cycle of a CMP smart meter – that is, the percentage of time each day that a smart meter transmits RF. Carpenter Depo. at 98:8-11. Although Dr. Carpenter asserts in his report that if a smart meter were installed at Mr. Friedman's home he would be exposed to RF "24/7," Carpenter Report at 2-3, that is demonstrably false. The reality is that 80% of all the smart meters in CMP's mesh network transmit for less than one second

per day, and 99% transmit for less than nine seconds per day.⁴ Report of Benjamin Cotts, Ph.D. (Exhibit C, hereinafter “Cotts Report”) at 16-17.

Power Density Data

The Federal Communications Commission (FCC), which is the agency empowered to regulate wireless communication devices, has “established a set of guidelines for evaluating the environmental effects of RF exposure.” *Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, ET Docket No. 93-62, *Report and Order*, 11 FCC Rcd 15123 (1996) (hereinafter *FCC 1996 RF Order*). The guidelines impose limits for specific absorption rate (SAR, the metric for highly-localized, close-in exposure at commonly-used frequencies) and maximum permissible exposure (MPE, the measure for more-distant, whole-body exposure and for whole-body exposure at higher frequencies). Because “smart meters are designed generally to be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter’s radiating structure(s) and the bodies of any nearby persons [they] qualify for exposure evaluation using MPE limits rather than SAR limits.” *FCC 2019 RF Order* at 17, n. 92.

There have been two field studies commissioned to analyze the RF exposures produced by CMP smart meters. Both studies specifically compared those exposures to the FCC’s MPE limits. The first study, conducted in September 2012 by Exponent, Inc. on behalf of CMP, found that “the exposures from the CMP smart meters are far below (conservatively less than 1/5,880 or 0.017%) the FCC MPE limit” of 1 mW/cm², time-averaged power density. The second study, conducted in January 2013 on behalf of the Office of the Public Advocate, likewise found that RF emissions from CMP’s “Smart Meters and associated AMI infrastructure devices produced

⁴ Because CMP’s mesh network is a “dynamic” network, the duty cycle of any given meter changes from day to day, making it impossible to specify exactly how long a meter installed at the Plaintiff’s house would transmit each day. Deposition of Central Maine Power Company at 25:11-26:10 & 27:12-23.

emissions significantly below the maximum power density exposure levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01 for the general public.” Dr. Carpenter has not reviewed either study. Carpenter Depo. at 68:20-69:1.

Finally, Dr. Carpenter has no information about the Plaintiff’s exposure to RF from sources other than smart meters, based on the activities he engages in and where he lives. Carpenter Depo. at 66:8-16. Thus, he does not know that Mr. Friedman is exposed to man-made RF (from radio and TV towers, helicopter radio, and a solar panel inverter) at levels that are far greater than the exposure he would experience from a smart meter. Cotts Report at 19-24.

b. Medical Data

Dr. Carpenter has never reviewed any of the Plaintiff’s medical records. Carpenter Depo. at 39:16-17. He has no information about when or how the Plaintiff acquired his cancer, Carpenter Depo. at 39:18-20, or how long it has been in remission. Carpenter Depo. at 40:6-9. All Dr. Carpenter knows about the Plaintiff’s symptoms, and how they have progressed over the course of his lifetime, is that he suffers from fatigue, and from bone and joint pain. Carpenter Depo. at 39:21-40:16.

2. Dr. Carpenter’s testimony is inadmissible because he is not qualified to opine on medical causation, he lacks the foundational data essential to analyzing medical causation, and the evidence upon which he relies does not support his conclusions.

a. Dr. Carpenter Is Not Qualified to Offer Opinions About Individualized Medical Causation or Risk.

“[T]he Federal Rules of Evidence . . . require that proffered experts confine their testimony to the subjects on which they are qualified to opine. In short, experts must stay in their lane, and [the] Court [should] police inappropriate drifting.” *In re M/V MSC FLAMINIA*, 2017 WL 3208598, at *2 (S.D.N.Y. July 28, 2017). Even licensed physicians may be unqualified to opine on the issue of specific causation – that is, the question of whether, and how, an agent has affected

or will affect the health of a particular individual – if they lack the expertise, training, or experience in a particular medical specialty that is needed to develop a reliable opinion. *See, e.g., N.K. by Bruestle-Kumra v. Abbott Labs.*, 2017 WL 2241507, at *3 (E.D.N.Y. May 22, 2017), *aff'd*, 731 F. App'x 24 (2d Cir. 2018) (pediatrician and toxicologist were not qualified to opine that Depakote caused child's physical and developmental impairments). Because Dr. Carpenter is not trained in oncology, and his medical practice has never included the treatment of living human beings, he is not qualified to offer opinions concerning the issues this Court has identified as central to the case: whether the Plaintiff would face a “unique” risk, because of his rare cancer, if he were exposed to the radiofrequency fields produced by a CMP smart meter on his property, and if so the magnitude of that risk.

Importantly, moreover, Dr. Carpenter frankly admits that he does not know at what level of RF exposure there is a clearly defined adverse human health effect. Carpenter Depo. at 57:16-59:20. Nor does he know what the health risks are of having smart meters. Carpenter Depo. at 63:8-18. Those are the most fundamental cornerstones of any expert opinion purporting to link an allegedly toxic exposure to an illness. Without knowing the threshold exposure level at which the risk to human health begins, Dr. Carpenter cannot credibly claim to have the expertise needed to opine that exposure to the RF produced by a CMP smart meter might harm the Plaintiff. *See McClain v. Metabolife Int'l, Inc.*, 401 F.3d 1233, 1241 (11th Cir. 2005) (“In toxic tort cases, ‘[s]cientific knowledge of the harmful level of exposure to a chemical plus knowledge that plaintiff was exposed to such quantities are minimal facts necessary to sustain the plaintiff's burden. . . .’”) (quoting *Allen v. Pennsylvania Eng'g Corp.*, 102 F.3d 194, 199 (5th Cir.1996)); *Mitchell v. Gencorp*, 165 F.3d 778, 781 (10th Cir.1999) (to carry the burden in a toxic tort case, a plaintiff

must demonstrate, inter alia, “the levels of exposure that are hazardous to human beings generally”) (quoting *Wright v. Willamette Indus., Inc.*, 91 F.3d 1105, 1106 (8th Cir.1996)).

b. Dr. Carpenter Lacks the Exposure Data Essential to an Informed, Scientifically-Reliable Analysis and Opinion.

To offer a scientifically-valid opinion that exposure to a substance was or would be harmful, moreover, an expert must know not only the exposure level at which the risk of harm materializes; he must also know whether the individual in question has actually been exposed (or, in a case that involves a risk of harm, whether the individual would in the future be exposed) to that threshold, potentially harmful dose. Thus, except in the most extraordinary cases an expert must have information documenting the plaintiff’s “actual or probable exposure.” *Polaino v. Bayer Corp.*, 122 F. Supp. 2d 63, 70 (D. Mass. 2000) (citing *Reference Manual on Scientific Evidence* at 206 (Fed. Jud. Center 1994)). Without it, the expert cannot offer a reliable causation opinion. *See Moore v. Ashland Chem. Inc.*, 151 F.3d 269, 278–79 (5th Cir.1998), *cert. denied*, 526 U.S. 1064 (1999) (physician could not show that reactive airways dysfunction syndrome was caused by toluene in a patient whose level of exposure to toluene was unknown).

In this case, the “effect” Dr. Carpenter posits is not causation of disease, but aggravation of symptoms and worsening of prognosis. The scientific principle, though, is the same as it would be if the case involved a claim of past harm. Before Carpenter can offer scientifically-valid testimony on the question of whether exposure to RF from a smart meter would have the “effect” he says it would have, he must have information that quantifies Friedman’s “actual or probable exposure” – not only the incremental exposure that a smart meter would produce but his aggregate exposure, taking into account exposures from sources other than a smart meter. This is not a case where exposure data is unavailable, or even hard to find. It is readily available. Dr. Carpenter just

has not bothered to look at it. That lack of scientific rigor is an important consideration in assessing the reliability of his testimony.

c. Dr. Carpenter Lacks the Medical Data That Is Essential to an Informed, Scientifically-Reliable Opinion.

An expert who proposes to offer specific causation testimony – that is, to testify about the effect exposure to an alleged toxin had, or would have, on a particular person – is required to familiarize himself with the person’s condition. Because familiarity with an individual’s medical condition is so fundamental to the foundation required under Fed. R. Evid. 702 and *Daubert*, it is a rare case where a court even finds it necessary to articulate this requirement. Most doctors, presumably, do not try to offer individualized medical opinions without having tried to understand the conditions of the persons they propose to testify about.

There are, therefore, countless cases where courts have allowed physicians to offer expert testimony about causation when they have not personally examined a patient, but have familiarized themselves with the patient’s condition by carefully and thoroughly reviewing the relevant medical history. Implicit in those decisions, however, is the assumption that *unless* a medical expert has *at least* reviewed an individual’s medical record, he lacks a sufficient basis, under Rule 702 and *Daubert*, for offering testifying about that person’s condition or prognosis.⁵

Conversely, on those very rare occasions when doctors have tried to testify without that basic foundational knowledge, their testimony has been excluded. *Parmentier v. Novartis Pharms.*

⁵ See, e.g., *Hopkins v. Dow Corning Corp.*, 33 F.3d 1116, 1125 (9th Cir. 1994) (rheumatologist’s testimony was “scientifically valid,” and therefore admissible under *Daubert*, where it was “based on medical records, his clinical experience, preliminary results of an epidemiological study and medical literature”); *Rivera v. Walmart, Inc.*, 2022 WL 1080976, at *4 (E.D. La. Mar. 7, 2022) (medical examiner’s testimony, based in part on her review of relevant medical records, was “grounded in . . . science” and therefore admissible under *Daubert*); *Ellis v. Ethicon, Inc.*, 2021 WL 2949779, at *5 (W.D. Wash. July 14, 2021) (expert could testify to causation “based on his experience and his review of [another doctor’s] expert report and [plaintiff’s] medical records”).

Corp., 2012 WL 2326047, at *5 (E.D. Mo. June 19, 2012) (excluding specific causation testimony where witness had not reviewed medical records and lacked information about other facts, including alcohol and tobacco consumption, that were relevant to plaintiff's health); *see Slate v. Massachusetts Mut. Life Ins. Co.*, 2014 WL 4699595, at *5 (W.D. Tenn. Sept. 19, 2014) (excluding chiropractor's testimony, which reflected his effort to "reconstruct" treatment based on his review of illegible and inconsistent records; the records were "not sufficiently reliable to permit him to testify as an expert pursuant to Rule 702 of the Federal Rules of Evidence"). Because Dr. Carpenter has not reviewed any medical records, and is almost wholly unfamiliar with the Plaintiff's condition, he lacks the foundation to offer an opinion about the way exposure to RF might "uniquely" affect Mr. Friedman because of his disease.

d. The Evidence Upon Which Dr. Carpenter Relies Does Not Support His Conclusions

- i. The IARC's classification of RF as a "possible human carcinogen" provides no scientific support for the proposition that exposure to RF at the level produced by a CMP smart meter would pose an individualized, disease-specific risk of harm to this Plaintiff.

As further support for his opinions, Dr. Carpenter observes that the International Association for Research on Cancer (IARC), an agency of the World Health Organization (WHO), https://www.iarc.who.int/cards_page/about-iarc/, has identified RF as a "possible human carcinogen." The WHO/IARC does not support Plaintiff's claims.

IARC conducts "assessments of the carcinogenic potential of various agents," and classifies them according to the strength of the evidence linking them to cancer. Report of Gabor Mezei, (Exhibit D, hereinafter "Mezei Report") at 11-12.

In 2013, the IARC reviewed the scientific literature to evaluate potential carcinogenic effects of RF fields with a particular focus on exposures produced by close proximity to RF sources, such as from mobile phones

(IARC, 2013)⁶. The IARC expert working group classified RF fields as possibly carcinogenic (Group 2B) based on “limited evidence” for carcinogenicity of RF fields from mobile phone epidemiologic studies in relation to glioma and acoustic neuroma, and based on “limited evidence” from experimental animal studies. The IARC concluded that results from epidemiologic studies of mobile phones and all other types of cancer, and from epidemiologic studies of occupational and environmental exposure to RF fields provided no clear indication of an association between RF exposure and cancer development.

Mezei Report at 16 (emphasis added).

The WHO/IARC classification “does not imply that a cause-and-effect relationship is established between an exposure and cancer.” Mezei Report at 16. “To the contrary, it means that artifacts such as chance, confounding, and bias cannot be ruled out with scientific certainty as an explanation for the limited statistical association reported in some of the studies.” Mezei Report at 16. According to IARC, “the evidence from studies of environmental exposures (i.e., RF sources with fixed location, such as radio and television antennae and wireless communication equipment) and cancer development was ‘judged inadequate’ to suggest an association.” Mezei Report at 16. In short, IARC’s classification of RF as a “possible human carcinogen” provides no support for an opinion that Ed Friedman’s exposure to RF is likely to create a “substantial” or “significant” risk of exacerbation of his cancer, or worsening of his cancer symptoms.

- ii. The fact that smart meters emit RF intermittently, instead of continuously, provides no scientific support for Dr. Carpenter’s opinions.

According to Dr. Carpenter, there is “some evidence” that the superimposed rapid rises and falls of sine waves which are produced by smart meters, as distinguished from the “natural sine wave” itself, generate reactive oxygen species and cause adverse health symptoms. Carpenter

⁶ The cited source is International Agency for Research on Cancer. *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans - Non-Ionizing Radiation, Part 2: Radiofrequency Electromagnetic Fields*. (Volume 102). <https://monographs.iarc.who.int/wp-content/uploads/2018/06/mono102.pdf>.

Depo. at 88:12-89:21.⁷ He acknowledges, however, that he does not know of a good explanation for *why* this rapid pulsing of electromagnetic energy would generate reactive oxygen species more than the “natural” sine wave would. Carpenter Depo. at 87:6-11.⁸ He just believes that it is true.

Under Rule 702 and *Daubert*, the Court’s focus “must be solely on principles and methodology, not on the conclusions that they generate.” *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 594-95 (1993). It follows that a witness may not testify to a scientific “conclusion” unless he can explain the “principles and methodology” that yield that conclusion. *Soldo v. Sandoz Pharms. Corp.*, 244 F. Supp. 2d 434, 562 (W.D. Pa. 2003) (“[T]he lack of evidence regarding a medical mechanism to explain plaintiff’s experts’ causation theory further undermines the reliability of their opinions.”). After all, a key consideration in assessing the scientific reliability of any expert testimony is whether it can be tested. And where an expert does “not thoroughly explain his methodology for arriving at his conclusion, it [is] not possible to determine whether the premises underlying his methodology [are] testable.” *Dominguez v. Yahoo!, Inc.*, 2017 WL 390267, at *15 (E.D. Pa. Jan. 27, 2017), *aff’d sub nom. Dominguez on Behalf of Himself v. Yahoo, Inc.*, 894 F.3d 116 (3d Cir. 2018).

Here, Dr. Carpenter cannot possibly explain how and why he thinks the intermittent spiking of RF signal contributes to adverse health effect, because he acknowledges that he himself does not understand why that might be so. It is axiomatic that an expert witness cannot explain something he himself does not understand. Where, as here, “an expert . . . reaches a conclusion but

⁷ This is a phenomenon pejoratively referred to as “dirty electricity.” Erik Anderson, the electrical engineering expert designated by the Plaintiff, acknowledges that “dirty electricity” is not a technical term. Anderson Depo. (Exhibit E) at 64:7-12. It is a “descriptor” of electrical energy that deviates from a “clean sine wave.” Anderson Depo. 64:12-65:14.

⁸ Notably, moreover, Erik Anderson, whose testimony describes this rapid pulsing of electromagnetic energy, acknowledges that he has no information to suggest that the phenomenon has any adverse health effects. Anderson Depo. at 65:15-18.

provides no explanation for it,” he “gives the Court no insight into the reasons for his opinion or the means used to reach it.” *Piepes v. NAI Ent. Holdings LLC*, 394 F. Supp. 3d 315, 318 (E.D.N.Y. 2019). Because “such a deficiency makes it impossible for a Court to conduct a *Daubert* inquiry,” *id.*, Dr. Carpenter’s assertion that “the rapid rise and fall of . . . RF peaks,” produced by “very high intensity but very brief burst[s] of pulses” of RF energy from smart meters is harmful to human health, is unreliable, and it provides no scientific support for his ultimate opinions.

- iii. The fact that RF may be conducted through a physical structure, such as a house, provides no scientific support for Dr. Carpenter’s opinions.

An expert designated by CMP has explained:

An electromagnetic wave has a finite amount of energy at the source; as it moves away, that energy is spread out over a much greater area, and the strength of the wave will therefore attenuate . . . even if it does not pass through a boundary. This leads to a decreasing amount of energy at locations farther from the source. The power density of the RF field decreases with the square of the distance from the source according to the inverse-square law. So, an individual located 10 yards from a source will be exposed to 100 times less RF energy than an individual located 1 yard from the same source.

Cotts Report at 10.

In order to deal with this undisputed scientific fact, Dr. Carpenter says: “Besides airborne transmission emissions to the utility there is some evidence these RF emissions as well as lower frequency emissions affecting power quality, may be transmitted throughout structures as conducted and radiating emissions on building wiring, acting as an antenna (Isotrope, 2013).” Carpenter Report at 3. The purpose of this observation, it appears, is to imply that if a smart meter were installed at Mr. Friedman’s home, he could not limit his exposure to RF by having it installed in a location that is separate from his living area – he still would be subjected to “conducted emissions” propagated through the household wiring.

In his deposition, however, when Dr. Carpenter was asked to explain the significance of this phenomenon, he could not:

A. Well, what I'm trying to explain there, and again I am not an electrical engineer but the -- there -- the engineers do make statements that say that you get radiofrequency emissions from power lines. You get dirty electricity on all of these different kinds of things and that the -- obviously, the electromagnetic fields go through the air, but they can be conducted into the wiring of the house and that can increase the exposure of dirty electricity because of the building wiring, which acts as an antennae. Again, **I shouldn't pretend that I really understand that all that well**, but that's why I do have a reference for that because this is the kind of statements that are made by the engineers that do understand how household wiring and whether a house is made of metal or brick or wood influences the lower-frequency emissions that you get.

Q. You mean lower -- do you mean lower-intensity emissions or lower frequencies?

A. Well, this is -- both RF and lower-frequency emissions that affect the quality of the signal. I'm not explaining that very well because **I don't understand it very well**.

Carpenter Depo. at 105:8- 106:17 (emphasis added).

For the reasons already discussed, Dr. Carpenter's admission that he does not understand the phenomenon he purports to describe should foreclose his reliance on that phenomenon to support his ultimate opinions. Because he does not profess to understand his own theory, and he admits that he cannot explain the basis for it, it is "impossible for a Court to conduct a *Daubert* inquiry" to test it. *Piepes v. NAI Ent. Holdings LLC*, 394 F. Supp. 3d at 318. If the Court finds it necessary to go further, though, there are other reasons that Dr. Carpenter's "conducted emission" theory does not withstand scrutiny.

First, even if Dr. Carpenter *did* understand what "conducted emissions" are, he would not be able to bring that understanding to bear, because the RF exposure that conducted emissions would produce in Mr. Friedman's home, at any location remote from a smart meter, has never been measured. Carpenter Depo. at 106:20-107:12. Thus, the fact that emissions *may* in theory be transmitted through building wiring does not inform Dr. Carpenter's opinions about Mr.

Friedman’s hypothetical exposure in any way whatsoever. Because Dr. Carpenter admits that he has *no idea* whether the conduction of RF emissions through the wiring in the Plaintiff’s house would “have any impact whatsoever” on him, Carpenter Depo. at 107:13-19, his proposed testimony about “conducted emissions” would not “assist the trier of fact to understand or determine a fact in issue.” *Ruiz-Troche, supra*, 161 F.3d at 81. That is, it would not “fit.” *Id.*

Second, as explained by Benjamin Cotts, Ph. D.:

Part of the definition of a conducted emission is that, primarily speaking, a conducted emission is an emission where a signal that is primarily confined to the wire or the metal that it is on. Now, there is certainly a very tiny fraction of energy that can flow on a wire that can become radiated or can get out of the wire to a limited extent, but for most objects, the amount of energy is extremely small, and it's also, without getting into the specifics of antenna theory, it doesn't go anywhere. It's known as what is called an evanescent wave. There may be a very little bit of energy around the wire, but it stays right there. It doesn't go anywhere. It doesn't propagate away from the wire.

Cotts Depo. at 44:23-45:17.

In summary, then, Dr. Carpenter’s reliance on the phenomenon of “conducted emissions” is misplaced because: (1) he does not understand what conducted emissions are, (2) there has never been an effort to measure or estimate the RF exposure conducted emissions would produce if a smart meter were installed in Ed Friedman’s home; and (3) the only evidence that *does* exist in the record is that conducted emissions produce virtually no exposure to RF.

iv. Studies of electrically hypersensitive individuals provide no scientific support for Dr. Carpenter’s opinions.

Dr. Carpenter next hypothesizes that there is a condition known as “electro-hypersensitivity (EHS),” a syndrome which he says is “found in some individuals who in the presence of elevated RF-EMFs develop symptoms of fatigue, headache, brain fog, tinnitus and other symptoms that in some people can be very disabling”; that “EHS symptoms like these and others share much in common with many cancer symptoms and cancer treatment side-effect

symptoms”; and that therefore, “Mr. Friedman’s concerns are well founded that RF exposure risks exacerbating some of his present symptoms.” Carpenter Report at 3.

Assuming EHS is a real phenomenon⁹, there is not, and never has been, any allegation that it afflicts Ed Friedman. When asked whether he has “any basis whatsoever for believing that Mr. Friedman suffers from electromagnetic hypersensitivity,” Dr. Carpenter admitted that he does not; therefore, it is *not* his opinion that Friedman “should be accommodated in a particular way because he is electromagnetically hypersensitive.” Carpenter Depo. at 39:2-15. He thinks EHS is important, though, because (1) people who have EHS suffer from fatigue, headaches, “brain fog” and tinnitus; (2) people who have cancer suffer from fatigue, headaches, “brain fog” and tinnitus; so (3) therefore, RF is likely to affect people with cancer the same way it affects people with EHS. Dr. Carpenter cites no scientific authority for this line of reasoning. More fundamentally, it makes no sense.

The theory that some people are hypersensitive to electromagnetic fields is premised on the idea that those people, because of their biological makeup, have idiosyncratic biological reactions to electricity – they experience symptoms that other people do not experience when exposed to electromagnetic fields. The claim, in other words, is that exposure to EMF causes their EHS symptoms. Here, in contrast, Ed Friedman’s allegation is that exposure to RF might make his cancer worse, or aggravate its symptoms.¹⁰ He does not allege that he is a person who is uniquely vulnerable to adverse health effects from exposure to RF. Therefore, the fact that he happens to share some symptoms with people who claim to have EHS is irrelevant.

⁹ The theory that EHS exists is controversial, and CMP disputes it. The Court need not resolve the question, though, since neither Mr. Friedman nor any expert witness asserts that *he* is hypersensitive. For purposes of this motion only, the Court may assume that EHS is a real medical condition that afflicts some people.

¹⁰ To reiterate, there is no allegation that Mr. Friedman’s cancer was *caused* by exposure to RF, or that Waldenström’s Macroglobulinemia *can* be caused by exposure to RF.

If Mr. Friedman claimed he had EHS as well as cancer, the EHS literature might be relevant – but it would be relevant, if at all, because it would arguably support a claim that he should be accommodated *because of his EHS*, and *not* because of his cancer. Simply put, in this case, which involves a Plaintiff who does not allege that he is electrically hypersensitive, and whose medical expert does not say he is electrically hypersensitive, any testimony about the effects of RF on people who *are* electrically hypersensitive does not “fit,” because it would not “assist the trier of fact to understand or determine a fact in issue.” *Ruiz-Troche, supra*, 161 F.3d at 81.

v. Self-reports from individuals who believe their symptoms are associated with RF provide no scientific support for Dr. Carpenter’s opinions.

Dr. Carpenter also cites, as support for his opinions, published reports of people who claim to be able to link their own symptoms to the proximity of electromagnetic fields.

- One report (by McCarty) describes an individual who, in the words of Dr. Carpenter, purportedly “suffered from EHS,” and self-reported his ability to identify, by reference to his symptoms, when electromagnetic fields (EMFs) were turned on and off. Carpenter Report at 3.
- The second (by Lamech) describes “142 Australians who submitted information on a public web site on changes in health status after a smart meter was installed on their home.” Carpenter Report at 3.
- The third publication is a survey in which some respondents “self-reported changes in health status,” including “pressure in head, ringing, buzzing/tinnitus, difficulty concentrating, insomnia, heart racing, arrhythmia, headaches and fatigue,” after smart meters were installed on their homes. Carpenter Report at 3.

- The fourth is a report authored by Carpenter himself, describing claims made by a couple who reported that they had developed “symptoms of EHS” after a smart meter was placed on their home without their knowledge. Carpenter Report at 3

These studies, besides being irrelevant because they purport to reflect the experience of persons with EHS (a condition the Plaintiff does not claim to have), are unhelpful for another reason as well – anecdotal self-reports of symptoms temporally associated with exposures do not constitute scientifically-valid evidence of a causal link between the exposure and the symptoms. *Newell Rubbermaid, Inc. v. Raymond Corp.*, 676 F.3d 521, 527 (6th Cir. 2012) (“Red flags that caution against certifying an expert include reliance on anecdotal evidence”); *Allison v. McGhan Med. Corp.*, 184 F.3d 1300, 1312 (11th Cir. 1999) (factors undermining reliability of expert testimony include “reliance on anecdotal evidence (as in case reports)” and “temporal proximity”); *Hollander v. Sandoz Pharms. Corp.*, 95 F. Supp. 2d 1230, 1237 (W.D. Okla. 2000), *aff’d in part and remanded*, 289 F.3d 1193 (10th Cir. 2002) (“Because of their limitations, case reports have been repeatedly rejected as a scientific basis for a conclusion regarding causation.”). Even Dr. Carpenter acknowledges as much. Carpenter Depo. at 32:7-33:21 (referring to Lamech study, as well as his own report: “Those are anecdotal. They don’t constitute what I would consider adequate documentation.”).

Furthermore, two of the sources cited by Carpenter – the Lamech and Conrad surveys – are not even legitimate “case studies.” “Case studies assess general causation by the accumulation of individual cases showing the same connective pattern between a particular cause and effect.” *Pick v. Am. Med. Sys., Inc.*, 958 F. Supp. 1151, 1160 (E.D. La. 1997). Although they “suffer from methodological flaws,” including the fact that “the symptoms are often subjective on the part of the patient, susceptible to exaggeration or outright falsity,” they generally “employ valid scientific

methodology” – medical hypotheses are tested and re-tested by examining individuals with varying levels of exposure and comparing their symptoms. *Id.* at 1160-61. But in contrast to the subjects of legitimate case studies, the individuals who reported their symptoms to Lamech and Conrad were not, it appears, “examined” by anyone. There is no medical verification that the symptoms reported in the surveys were real, and there was no effort to analyze whether there might have been alternative explanations for the symptoms, assuming they were real. These answers to mass questionnaires and surveys are, by their very nature, unverifiable and untestable.

- vi. Data purportedly showing associations between sources of RF other than smart meters, and cancers other than WM, provide no scientific support for Dr. Carpenter’s opinions.

Finally, Dr. Carpenter relies on research produced by “the US National Toxicology Program (Wyde et al., 2018) and . . . the Ramazzini Institute in Italy (Falcioni et al., 2018),” which he says “have found that RF-EMFs at intensities modeled to reflect whole body exposure from cell phones . . . and cell towers, respectively, cause malignant brain and cardiac Schwannoma cancers in rodents, and also caused DNA damage to neurons.” Carpenter Report at 4. He goes on to say that “[t]here is a large body of evidence showing that excessive exposure to EMF of various frequencies increases risk of cancer.” *Id.*

This evidence, such as it is, does not “fit” the Plaintiff’s theory of the case. The Court has ruled that the relevant question here is whether exposure to RF, at the dose produced by a CMP smart meter, would subject Mr. Friedman, who suffers from Waldenstrom’s Macroglobulinemia, to a risk of harm that is both “unique” to persons afflicted with that illness and “significant enough” to deprive him of the ability to make use of CMP’s product. The NTP and Ramazzini studies do not “fit” that theory of liability because (1) there is no indication that either study analyzed exposures to RF at levels approximating the levels produced by CMP smart meters; (2) the NTP and Ramazzini studies analyzed *causation* of cancer, whereas this case is about the *worsening* of

prognosis and symptoms, and Dr. Carpenter, who is not an oncologist, does not purport to be competent to testify that an agent that causes cancer will *also* exacerbate it; (3) both studies purportedly establish that RF causes “malignant brain and cardiac Schwannoma cancers in rodents,” and Dr. Carpenter does not purport to be competent to testify that the mechanisms that cause either malignant brain cancer or cardiac Schwannomas in rodents are the same as the mechanism that exacerbates Waldenstrom’s Macroglobulinemia in human beings.

Even apart from the problem of “fit,” moreover, the NTP and Ramazzini studies do not constitute reliable, scientifically valid evidence that there is a causal connection between RF and *any* cancer in human beings. The Federal Communications Commission recently re-examined the body of evidence that has been submitted by petitioners trying to establish that there is a causal connection between exposure to RF and cancer. As discussed in a Decision that was affirmed in relevant part by the United States Court of Appeals for the D.C. Circuit, *Environmental Health Trust v. Federal Communications Commission*, 9 F.4th 893, 912 (D.C. Cir. 2021), the FCC found that the evidence supporting that proposition – specifically including the NTP and Ramazzini studies – did not in fact provide scientifically-valid support for it. As the D.C. Circuit observed, the FCC in its Order:

- “[E]xplain[ed] that the results of the NTP study ‘**cannot be extrapolated to humans** because (1) the rats and mice received RF radiation across their whole bodies; (2) the exposure levels were higher than what people receive under the current rules; (3) the duration of exposure was longer than what people receive; and (4) the studies were based on 2G and 3G phones and did not study WiFi or 5G,’ (quoting 34 FCC Rcd. at 11,693 n.33),” and
- “[C]ite[d] a response to both studies published by the International Commission on Non-Ionizing Radiation Protection [ICNIRP] that provides a detailed explanation of various **inconsistencies and limitations in the studies** and concludes that ‘consideration of their findings **does not provide evidence that radiofrequency EMF is carcinogenic.**’” (quoting ICNIRP Note on Recent Animal Carcinogenesis Studies 6 (2018), <https://www.icnirp.org/cms/upload/publications/ICNIRPnote2018.pdf>, and 34 FCC Rcd. at 11,693 n.34).

Id. (emphasis added).

All of this should be enough to demonstrate that Dr. Carpenter’s opinions are not scientifically valid. The admissibility of his testimony is not saved by his catch-all assertion that “[t]here is a large body of evidence [which can be found in the Bioinitiative Report] showing that excessive exposure to EMF of various frequencies increases risk of cancer.” Carpenter Report at 4. That broad statement has no evidentiary value, since (1) it does not define “excessive exposure,” (2) it does not compare the exposure Dr. Carpenter characterizes as “excessive” with the exposure from a CMP smart meter, and (3) it does not quantify the “increase[d] risk” of cancer from exposure to EMF (is it 1%, 10%, or something more?) and (4) it does not identify the cancers that are supposedly more likely to occur if a person is exposed to “excessive” RF. Simply saying that *some* exposures, at *some* levels, can cause *some* cancers, does not help establish that the exposure at issue *in this case* – that which would be produced by a CMP smart meter – would have an adverse effect on the health of *this Plaintiff*, because of his disease.

CONCLUSION

For the reasons set forth above, CMP respectfully requests that the Court issue an Order excluding any opinion testimony by Dr. David Carpenter at trial.

Dated at Portland, Maine this 31st day of May, 2023.

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**UNITED STATES DISTRICT COURT
DISTRICT OF MAINE**

Certificate of Service

I hereby certify that on May 31, 2023, I electronically filed the Defendant's Statement of Undisputed Material Facts with the Clerk of Court using the CM/ECF system which will send notification of such filing to all counsel of record.

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